# W-D Round BOILERS

Warneke-Derin[illegible]r Co.

MINNEAPOLIS, MINN.

INTERNATIONAL

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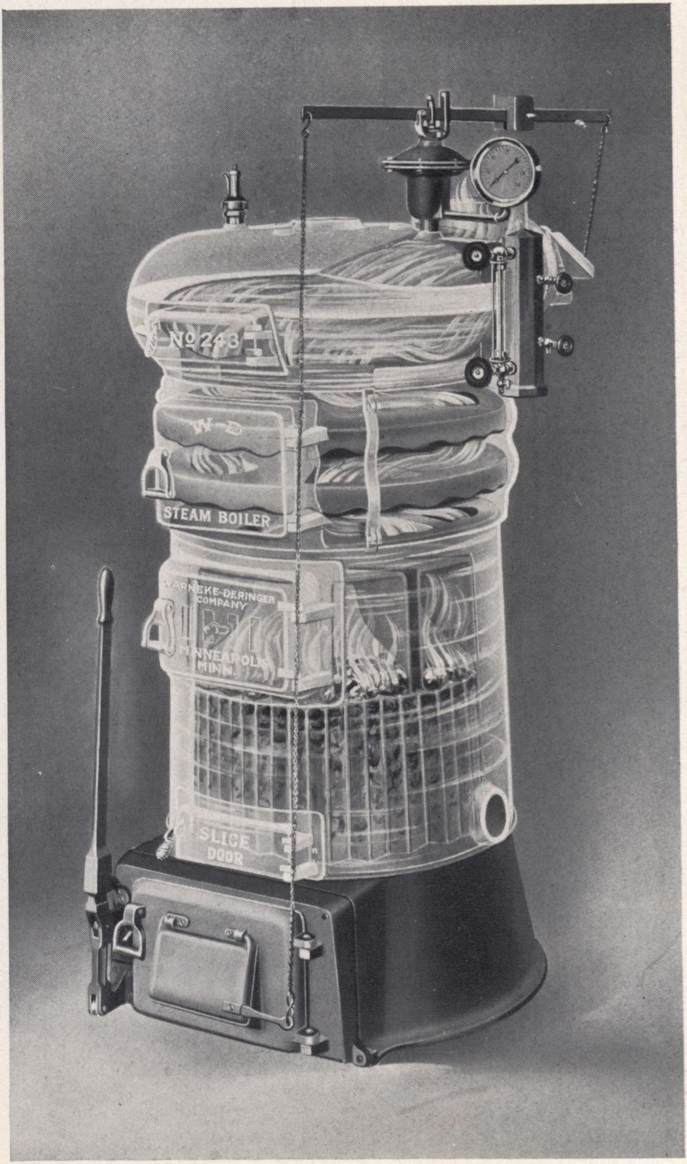
BOILER CATALOGUE

# WARNEKE-DERINGER COMPANY

MINNEAPOLIS
MINN.

WAREHOUSES
MINNEAPOLIS, MINN.
MILWAUKEE, WIS.



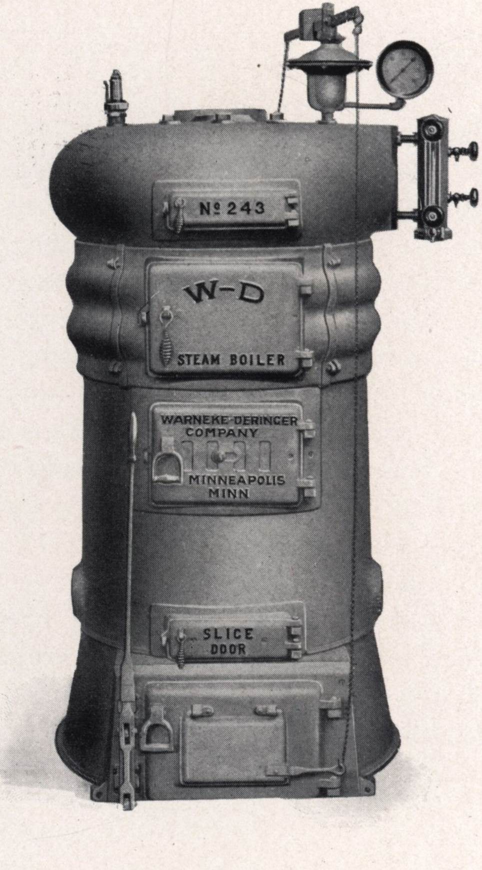
No 243
W-D
STEAM BOILER
WARNEKE-DERINGER COMPANY
MINNEAPOLIS MINN.
SLICE DOOR

# INTRODUCTION

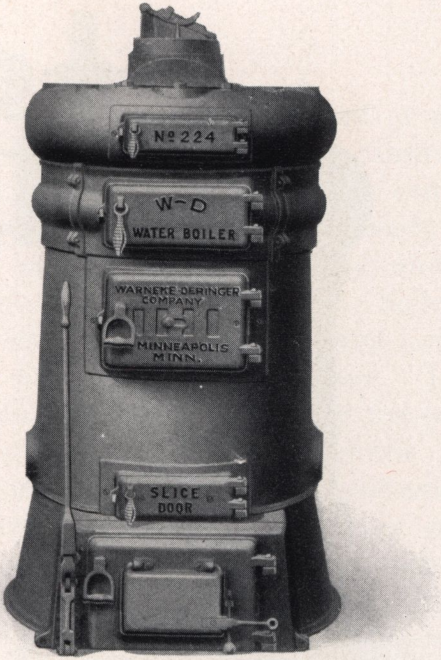
IN presenting our line of "W-D" round boilers for your consideration we wish to state, that, in designing this boiler, we had in mind the development of the greatest possible efficiency per pound of iron used that could be produced in a boiler of this type, and believe that a careful study of our product will convince the conservative purchaser of steam and hot-water boilers that, for a well-designed, properly proportioned boiler, the "W-D" has no equal.

Please note carefully the firepot, grate arrangement, radially corrugated intermediate sections, and dome construction of this boiler as shown on the following pages.

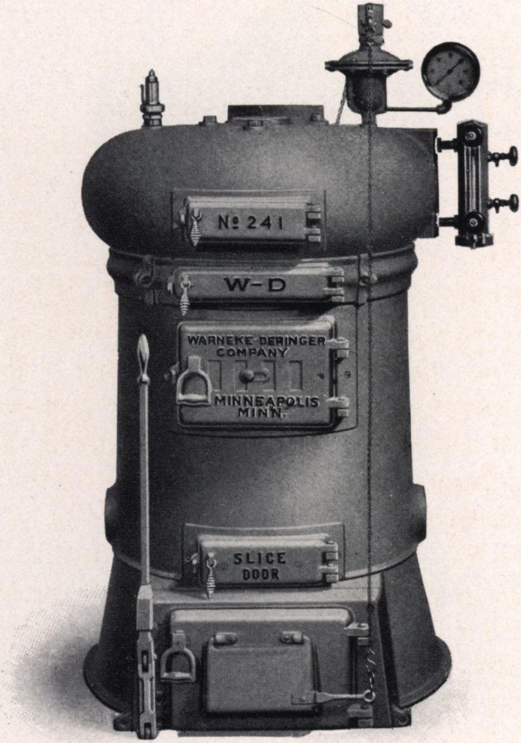
Respectfully yours,
WARNEKE-DERINGER CO.



**W-D** STEAM BOILER with double dome and two radially corrugated intermediate sections.



W-D WATER BOILER with double dome and one radially corrugated intermediate section.

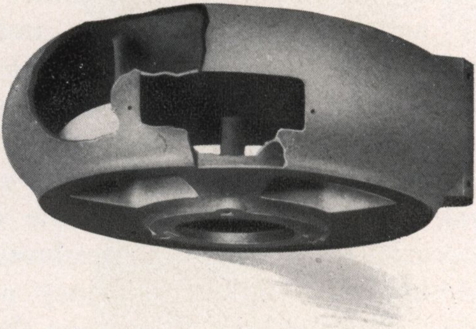


W-D STEAM BOILER with double dome.

THE W-D boiler, for hard or soft coal, is of push nipple construction, having one nipple in the center of the boiler of ample size to insure of free and perfect circulation, and a steady water line for steam boilers. This nipple is of cast iron and larger than has heretofore been used. The openings for fire travel in the fire-pot, intermediate sections, and dome are proportioned to produce combustion and obtain the highest efficiency possible. Our method of erecting these parts is such that the control of the fire travel, both longitudinally and vertically, in the W-D boiler, cannot be excelled.

# W-D Double Dome

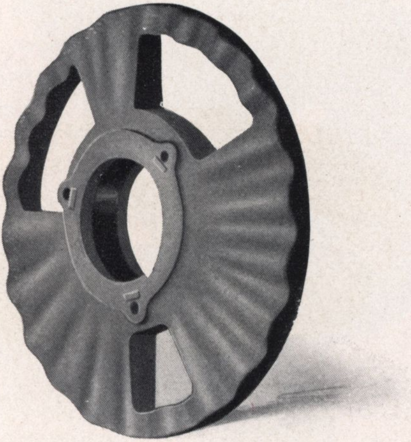
## This a dome and intermediate section cast in one piece



THIS dome is larger than anything that has heretofore been manufactured in this style of boiler: PROVIDING larger steam space; better proportioned smoke openings; increased heating surface; less cost in setting, account of water column being cast on dome.

# W-D Radially Corrugated Intermediate Section

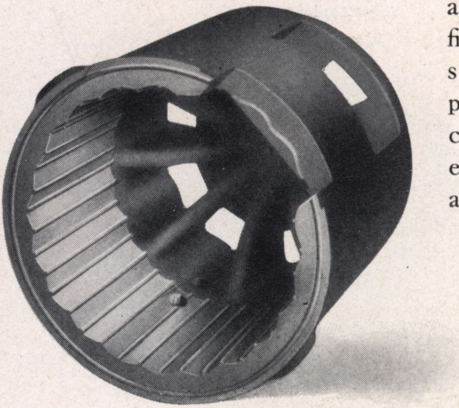
Patent Applied for



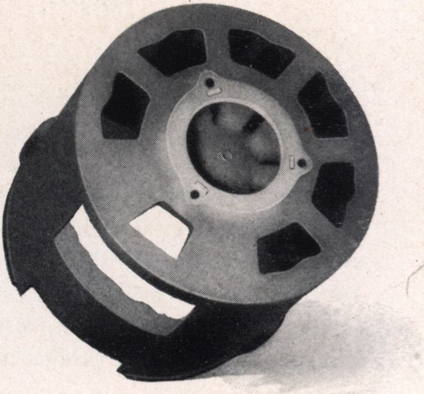
BEING corrugated on under side largely increases the heating surface where it is most efficient. Contains small volume of water, hence rapid circulation. Corrugations, being deeper at outer edge, serve also to retard or baffle the hot gases which in traveling over corrugations assume a whirling motion, producing a good admixture of gases and perfect combustion.

# Views of Fire-Pot

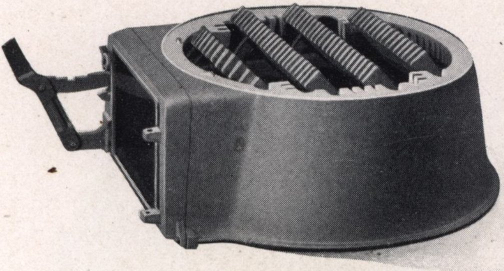
CORRUGATED surface means increased heating surface. Extension rib on top and bottom of corrugations prevents accumulation of ashes and dead fire around sides of fire-pot, which decreases the efficiency of any boiler.



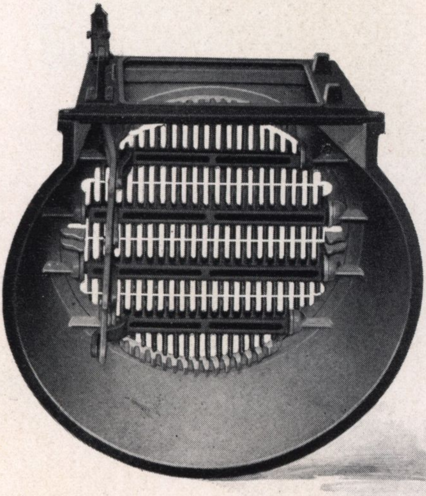
DEEP, thin arms, leading from sides of fire-pot to center opening provide increased heating surface and produce quick circulation.



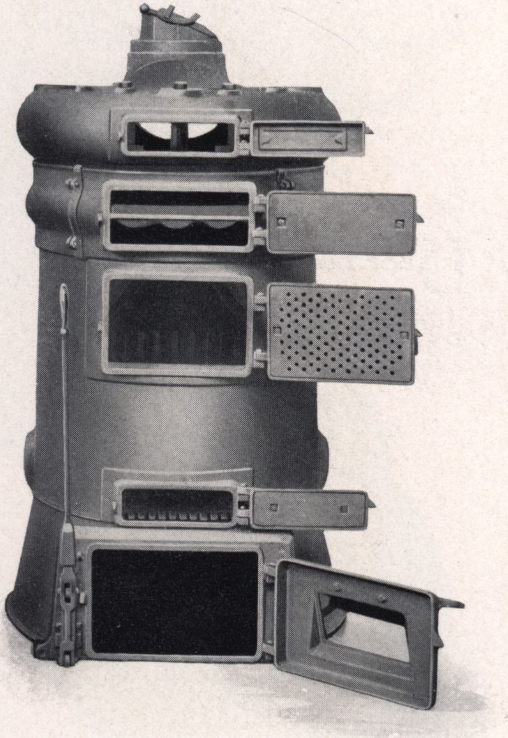
# Views of Base



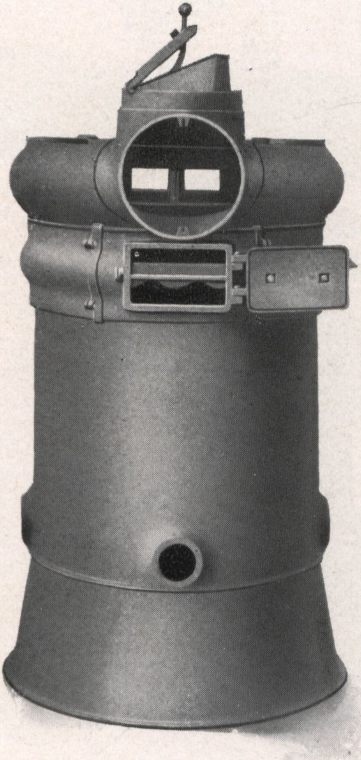
DEEP Ash Pit. Large openings when grates are in dumping position.



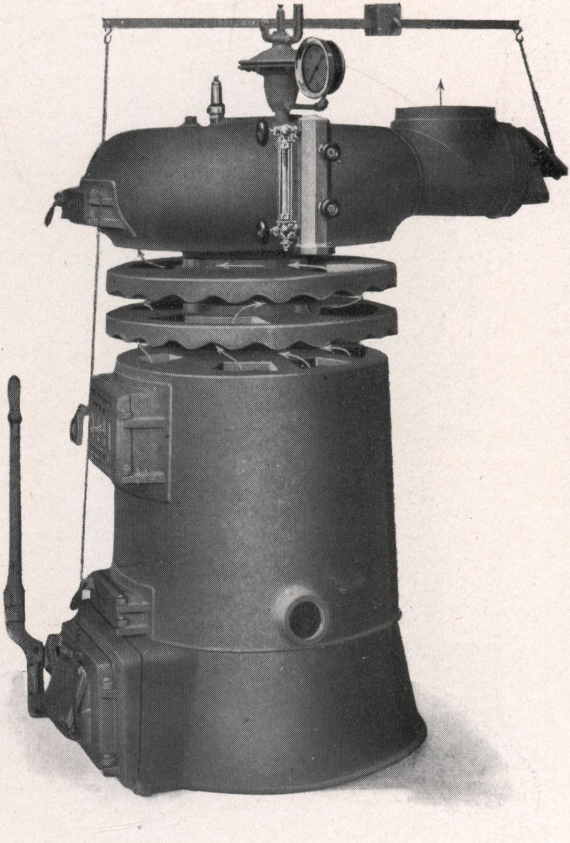
NO bolts or cotter pins to remove when replacing grates. Easily put in place through fire-doors opening.



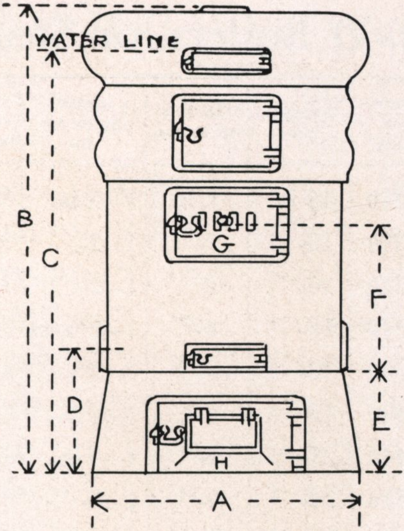
CLEANING W-D Boilers from the front is an easy operation, as indicated by this view.



THE back of W-D Boilers is also just as accessible for cleaning.



STEAM Boiler with Jacket removed, showing how the fire travel is controlled. The hot gases *must* travel four times *across* this boiler in rising from the fire-pot to the chimney.



## DIMENSIONS

| Steam No. | Water No. | A | B Steam | B Water | C Steam | D | E | F | G | H |
|---|---|---|---|---|---|---|---|---|---|---|
| 161 | 116 | 25 | 49½ | 46 | 45 | 14½ | 12¼ | 17¼ | 8¼ x 10⅞ | 10 x 12 |
| 162 | 216 | 25 | 54 | 50⅜ | 49½ | 14½ | 12¼ | 17¼ | 8¼ x 10⅞ | 10 x 12 |
| 163 | 316 | 25 | 58 | 54¾ | 54¾ | 14½ | 12¼ | 17¼ | 8¼ x 10⅞ | 10 x 12 |
| 181 | 118 | $27\frac{3}{16}$ | 50½ | 45¾ | 45 | 14¾ | 12½ | 17¼ | 8¼ x 10⅞ | 10 x 12 |
| 182 | 218 | $27\frac{3}{16}$ | 55 | 50¼ | 49¾ | 14¾ | 12½ | 17¼ | 8¼ x 10⅞ | 10 x 12 |
| 183 | 318 | $27\frac{3}{16}$ | 59 | 54½ | 53¾ | 14¾ | 12½ | 17¼ | 8¼ x 10⅞ | 10 x 12 |
| 211 | 121 | 30½ | 52½ | 48½ | 47 | 15 | 12½ | 18¼ | 8⅛ x 12½ | 10 x 15 |
| 212 | 221 | 30½ | 56½ | 52½ | 50½ | 15 | 12½ | 18¼ | 8⅛ x 12½ | 10 x 15 |
| 213 | 321 | 30½ | 60½ | 56½ | 54½ | 15 | 12½ | 18¼ | 8⅛ x 12½ | 10 x 15 |
| 241 | 124 | 33¼ | 52½ | 48½ | 47 | 15 | 12½ | 18¼ | 8⅛ x 12½ | 10 x 15 |
| 242 | 224 | 33¼ | 56½ | 52½ | 50½ | 15 | 12½ | 18¼ | 8⅛ x 12½ | 10 x 15 |
| 243 | 324 | 33¼ | 60½ | 56½ | 55 | 15 | 12½ | 18¼ | 8⅛ x 12½ | 10 x 15 |
| 271 | 127 | 36¼ | 54¼ | 50½ | 48 | 16¾ | 13¼ | 18⅝ | 9⅛ x 15⅜ | 11 x 19 |
| 272 | 227 | 36¼ | 59½ | 55 | 53 | 16¾ | 13¼ | 18⅝ | 9⅛ x 15⅜ | 11 x 19 |
| 273 | 327 | 36¼ | 64¼ | 60 | 58 | 16¾ | 13¼ | 18⅝ | 9⅛ x 15⅜ | 11 x 19 |
| 301 | 130 | 39¼ | 55 | 51½ | 49½ | 17 | 13¼ | 19 | 9⅛ x 15⅜ | 11 x 19 |
| 302 | 230 | 39¼ | 59½ | 56 | 53¾ | 17 | 13¼ | 19 | 9⅛ x 15⅜ | 11 x 19 |
| 303 | 330 | 39¼ | 63½ | 60 | 58 | 17 | 13½ | 19 | 9⅛ x 15⅜ | 11 x 19 |
| 341 | 134 | 44 | 55 | 51½ | 49½ | 17½ | 13¼ | 19 | 9⅛ x 15⅜ | 11 x 19 |
| 342 | 234 | 44 | 59½ | 56 | 54 | 17½ | 13¼ | 19 | 9⅛ x 15⅜ | 11 x 19 |
| 343 | 334 | 44 | 64 | 60½ | 58 | 17½ | 13¼ | 19 | 9⅛ x 15⅜ | 11 x 19 |

# W-D Boilers for Steam

| Number of Boiler | Commercial Rating* | Diameter of Grate | Diameter of Smoke Pipe | Outlets Number and Size | Inlets Number and Size |
|---|---|---|---|---|---|
| 161 | 250 | 16-in. | 7-in. | 1—2-in. | 3—2-in. |
| 162 | 290 | 16- “ | 7- “ | 1—2- “ | 3—2- “ |
| 163 | 320 | 16- “ | 7- “ | 1—2- “ | 3—2- “ |
| 181 | 340 | 18- “ | 8- “ | 1—2½-in. | 3—2-½in. |
| 182 | 390 | 18- “ | 8- “ | 1—2½- “ | 3—2½- “ |
| 183 | 420 | 18- “ | 8- “ | 1—2½- “ | 3—2½- “ |
| 211 | 440 | 21- “ | 9- “ | 1—3-in. | 3—3-in. |
| 212 | 530 | 21- “ | 9- “ | 1—3- “ | 3—3- “ |
| 213 | 575 | 21- “ | 9- “ | 1—3- “ | 3—3- “ |
| 241 | 600 | 24- “ | 10- “ | 1—3- “ | 3—3- “ |
| 242 | 700 | 24- “ | 10- “ | 1—3- “ | 3—3- “ |
| 243 | 750 | 24- “ | 10- “ | 1—3- “ | 3—3- “ |
| 271 | 790 | 27- “ | 11- “ | 1—4- “ | 3—4- “ |
| 272 | 910 | 27- “ | 11- “ | 1—4- “ | 3—4- “ |
| 273 | 980 | 27- “ | 11- “ | 1—4- “ | 3—4- “ |
| 301 | 1050 | 30- “ | 12- “ | 1—4- “ | 3—4- “ |
| 302 | 1225 | 30- “ | 12- “ | 1—4- “ | 3—4- “ |
| 303 | 1350 | 30- “ | 12- “ | 1—4- “ | 3—4- “ |
| 341 | 1400 | 34- “ | 13- “ | 1—5- “ | 3—5- “ |
| 342 | 1600 | 34- “ | 13- “ | 1—5- “ | 3—5- “ |
| 343 | 1720 | 34- “ | 13- “ | 1—5- “ | 3—5- “ |

*See page 18.

# W-D Boilers for Water

| Number of Boiler | Commercial Rating* | Diameter of Grate | Diameter of Smoke Pipe | Outlets Number and Size | Inlets Number and Size |
|---|---|---|---|---|---|
| 116 | 420 | 16-in. | 7-in. | 3—2-in. | 3—2-in. |
| 216 | 490 | 16- “ | 7- “ | 3—2- “ | 3—2- “ |
| 316 | 535 | 16- “ | 7- “ | 3—2- “ | 3—2- “ |
| 118 | 570 | 18- “ | 8- “ | 3—2½-in. | 3—2½ in. |
| 218 | 650 | 18- “ | 8- “ | 3—2½- “ | 3—2½- “ |
| 318 | 700 | 18- “ | 8- “ | 3—2½- “ | 3—2½- “ |
| 121 | 735 | 21- “ | 9- “ | 3—3- “ | 3—3- “ |
| 221 | 885 | 21- “ | 9- “ | 3—3- “ | 3—3- “ |
| 321 | 950 | 21- “ | 9- “ | 3—3- “ | 3—3- “ |
| 124 | 1000 | 24- “ | 10- “ | 3—3- “ | 3—3- “ |
| 224 | 1170 | 24- “ | 10- “ | 3—3- “ | 3—3- “ |
| 324 | 1250 | 24- “ | 10- “ | 3—3- “ | 3—3- “ |
| 127 | 1310 | 27- “ | 11- “ | 3—4- “ | 3—4- “ |
| 227 | 1535 | 27- “ | 11- “ | 3—4- “ | 3—4- “ |
| 327 | 1635 | 27- “ | 11- “ | 3—4- “ | 3—4- “ |
| 130 | 1750 | 30- “ | 12. “ | 3—4- “ | 3—4- “ |
| 230 | 2045 | 30- “ | 12- “ | 3—4- “ | 3—4- “ |
| 330 | 2250 | 30- “ | 12- “ | 3—4- “ | 3—4- “ |
| 134 | 2335 | 34- “ | 13- “ | 3—5- “ | 3—5- “ |
| 234 | 2670 | 34- “ | 13- “ | 3—5- “ | 3—5- “ |
| 334 | 2870 | 34- “ | 13- “ | 3—5- “ | 3—5- “ |

*See page 18.

¶ Note by comparing ratings with other Round boilers ratings on W-D are very conservative.

# Notes Important for Computing Boiler Capacities

THE radiating surface must be sufficient to heat the entire building in coldest weather with the water leaving the heater at a temperature of 180 Fahr., or with a steam pressure of 2 lbs., at the heater.

The boiler must be connected to a properly constructed chimney flue with good draft and ample capacity.

The surface of all piping must be included in the radiating surface. In the average building, the surface in the piping will equal about 25% of the surface in the radiators.

If pipe coils are used in place of cast-iron radiators, 25% must be added to the actual surface in the coils.

Where indirect radiation is used, there must be added 75% to the actual surface in all indirect radiators.

If direct-indirect radiators are used, there must be added 50% to the actual surface in all direct indirect radiators.

All boilers are provided with openings for the insertion of a coil to heat water for domestic use. A coil for this purpose requires additional boiler capacity. In a steam boiler, each gallon of water to be heated per hour requires 1¼ sq. ft. of heater capacity. In a water boiler, each gallon requires 2 sq. ft. of heater capacity.

When soft coal is used, or the boiler is to be placed in an extreme corner of the building, a size larger should be used.

When a water boiler is used as a tank heater for supplying water for domestic purposes it will heat as many gallons of water, from 40 deg. to 200 deg , as it will supply in sq. ft. of direct radiation. When a boiler is used for this purpose and it is connected with a water-works system of higher pressure, a pressure-reducing valve should be placed in the cold-water supply pipe.

We recommend some surplus capacity, as additional radiation may be required. We recommend covering the boiler with asbestos cement, which prevents the loss of heat. We also recommend covering the mains with sectional covering to prevent radiation of heat where it is not required.

Fire tools are furnished for all boilers and regular trimmings for steam boilers.

We guarantee our boilers only to the extent of our furnishing new castings for any found defective in manufacture.

Tribune Job Printing Company, Minneapolis, Minn.